

100G SR4 QSFP28 to QSFP28 Active Optical Cables

P/N: WS-QS28-AOCxyyz



Features

- Four-channel full-duplex AOC with aggregate bandwidth of 100Gbps
- Multirate capability: 10 Gb/s and 25 Gb/s per channel
- Supports 100Gbps aggregate data-rate links up to 100 m on OM4
- Reliable VCSEL array technology using multimode fiber
- Low power consumption of max 3.5 W
- Hot pluggable electrical interface
- Temperature Case operating range:
 - 0 to 70°C

Standard

- Compliant to SFF8431/SFF8432/SFF8472 Specification
- RoHS Compliant
- Compliant to IEEE 802.3bm 100GBASE SR4

Applications

- Ethernet for 100GBASE-SR4
- 40GBASE SR4 128G Fiber Channel
- Infiniband FDR/EDR

Description

The WST WS-QS28-AOCxxxxx is a Four-Channel, Pluggable, Parallel, Fiber-Optic QSFP+ SR4 for 100 or 40 Gigabit Ethernet, Infiniband FDR/EDR Applications. This transceiver is a high performance module for short-range multi-lane data communication and interconnect applications.

It integrates four data lanes in each direction with 100 Gbps bandwidth. Each lane can operate at 25Gbps up to 70 m using OM3 fiber or 100 m using OM4 fiber.

Absolute Maximum Rating

Any stress beyond these maximum values may cause permanent damage to the device.

Parameter	Min	Max	Unit	Note
Storage Temperature	-20	85	°C	
Powered case temperature range	0	70	°C	
Relative Humidity	5	85	%	

Recommended Operating Conditions

Parameter	Min	Typical	Max	Unit	Note
Case Operating Temperature	0		70	°C	
Power Supply Voltage	3.135	3.3	3.465	V	
Supply Current			230	mA	
Data Rate per Channel		25.78125		Gbps	
Bit Error Ratio (BER)		10^{-12}			1
Fiber Bend Radius	3			cm	

Notes:

1. Bit-Error-Rate (BER) is tested with PRBS $2^{31}-1$ pattern.

Electrical Characteristics

The EDR module requires an electrical connector compliant with SFF-8662 or SFF-8672 be used on the host board to guarantee its electrical interface specification. Please check with your connector supplier.

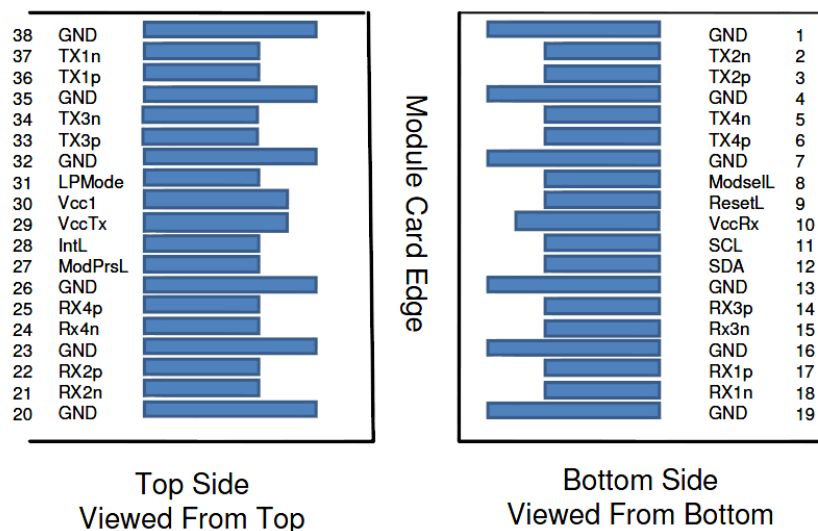
Parameter	Min	Typical	Max	Unit	Note
Supply Voltage	3.15		3.45	V	
Transceiver Power Supply Current			1010	mA	
Module Total Power			3.5	W	1,2
Transmitter					
Data Input Differential Peak-to-Peak Voltage Swing			900	mV	
Differential Termination Resistance Mismatch			10	%	
Transition time (min, 20% to 80%)	9.5			ps	
Bit Error Rate			1E-12		3
Receiver					
Data Output Differential Peak-to-Peak Voltage Swing			900	mV	
Transition time (min, 20% to 80%)	9.5			ps	
Differential Termination Resistance Mismatch			10	%	

Notes:

1. Maximum total power value is specified across the full temperature and voltage range.
2. Settable in various discrete steps via the I2C interface.
3. BER=10⁻¹²; PRBS [231-1@25.78125Gbps](#)

Optical Cable Specification

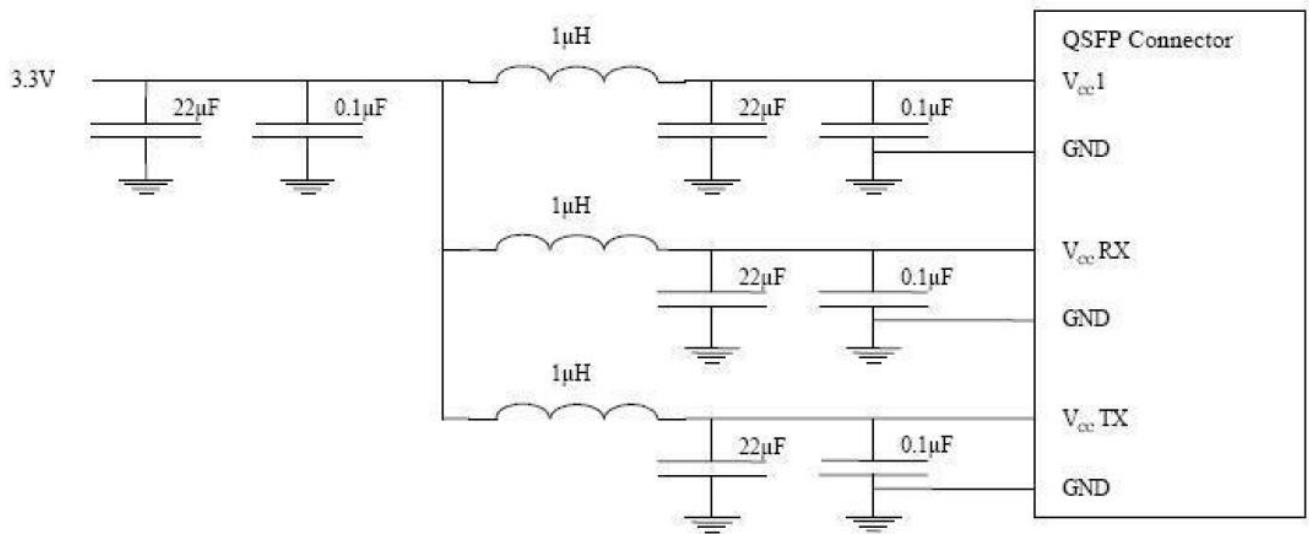
Parameter	Description
Module Form Factor	QSFP28 (Supports SFF8431/SFF8432/SFF8472)
Protocols Supported	InfiniBand, Ethernet, Fiber Channel
Channel Data Rate	Rate 1 to 103.125Gbps
Standard Cable Length	OM2: 1, 3, 5, 70 m OM4: 1, 3, 5, 10, 30, 50, 100 m
Cable Length Tolerance	Depends on product's length
Standard multi-mode fiber Type	OM2, OM3

QSFP28 Module Pad Assignments and Descriptions

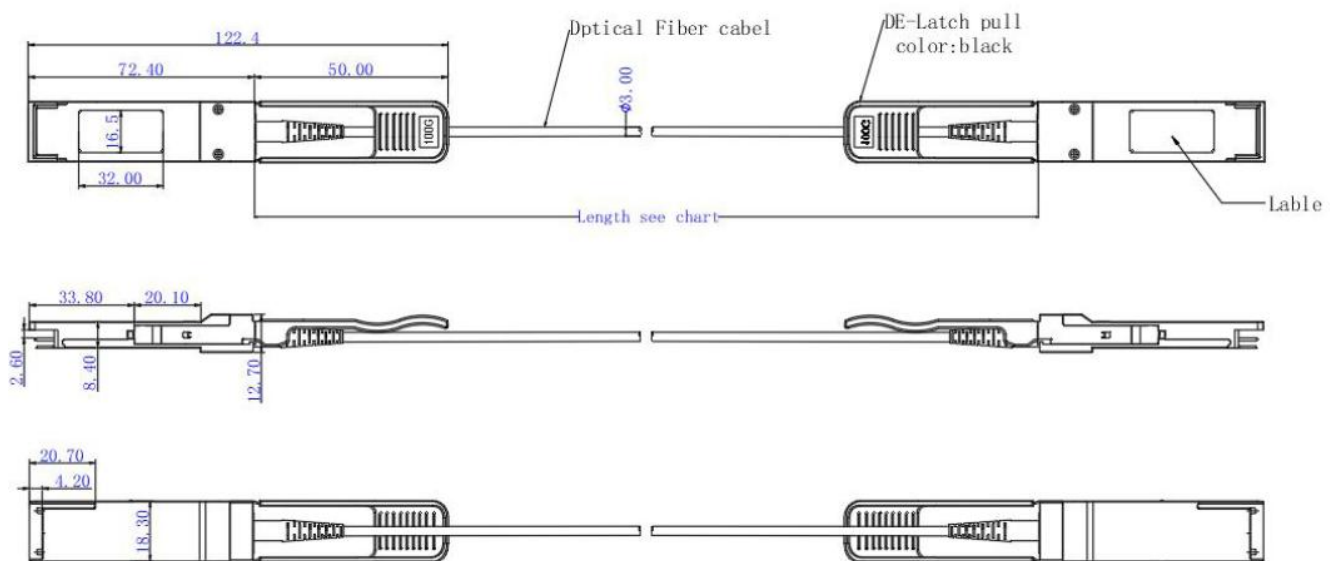
Pin	Symbol	Description	Notes
1	GND	Ground	1
2	Tx2n	Transmitter Inverted Data Input	
3	Tx2p	Transmitter Non-Inverted Data Input	
4	GND	Ground	1
5	Tx4n	Transmitter Inverted Data Input	

6	Tx4p	Transmitter Non-Inverted Data Input	
7	GND	Ground	1
8	ModSelL	Module Select	
9	ResetL	Module Reset	
10	Vcc Rx	+3.3V Power Supply Receiver	
11	SCL	2-wire serial interface clock	
12	SDA	2-wire serial interface data	
13	GND	Ground	1
14	Rx3p	Receiver Non-Inverted Data Output	
15	Rx3n	Receiver Inverted Data Output	
16	GND	Ground	1
17	Rx1p	Receiver Non-Inverted Data Output	
18	Rx1n	Receiver Inverted Data Output	
19	GND	Ground	1
20	GND	Ground	1
21	Rx2n	Receiver Inverted Data Output	
22	Rx2p	Receiver Non-Inverted Data Output	
23	GND	Ground	1
24	Rx4n	Receiver Inverted Data Output	
25	Rx4p	Receiver Non-Inverted Data Output	
26	GND	Ground	1
27	ModPrsL	Module Present	
28	IntL	Interrupt	
29	Vcc Tx	+3.3V Power supply transmitter	
30	Vcc1	+3.3V Power supply	
31	LPMode	Low Power Mode	
32	GND	Ground	1
33	Tx3p	Transmitter Non-Inverted Data Input	
34	Tx3n	Transmitter Inverted Data Input	
35	GND	Ground	1
36	Tx1p	Transmitter Non-Inverted Data Input	
37	Tx1n	Transmitter Inverted Data Input	
38	GND	Ground	1

Power Supply Filtering



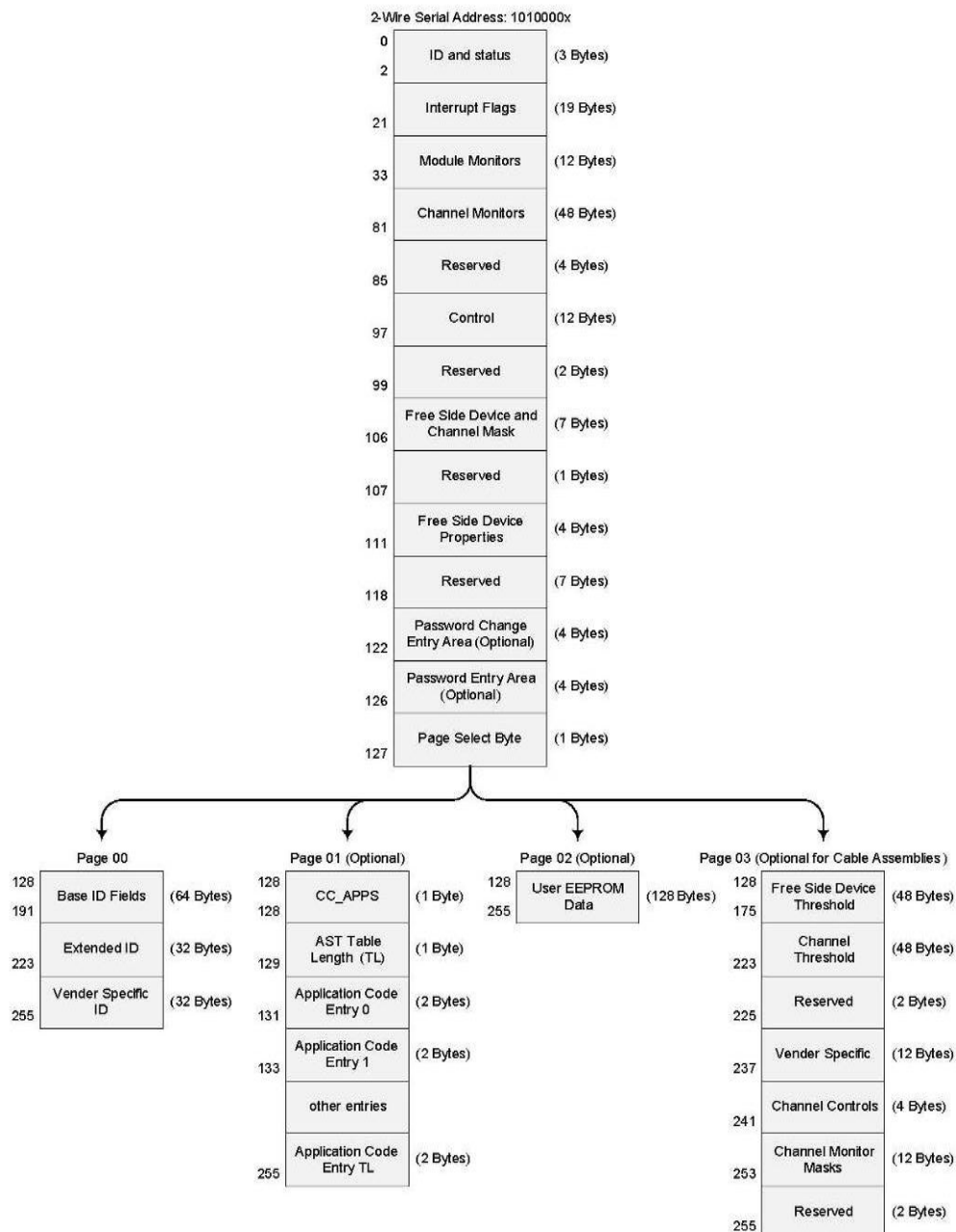
Mechanical Dimensions



Unit: mm

Memory Map

The memory map is structured as a single address and multiple page approaches, according to the QSFP SFF-8636 SNIA specification as shown in the below. For more detailed description of this memory map or lower pages, please see our Memory Map document with flexible customization settings.



Ordering Information

Part No	Specification						
	Package	Data Rate	Fiber	Cable Type*	Cable Length	Case Temp.	Application
WS-QS28-AOCLC012	QSFP28 to QSFP28	4x25Gbps	OM3	Round LSZH	1m	0~70°C	100G Ethernet
WS-QS28-AOCLC033	QSFP28 to QSFP28	4x25Gbps	OM3	Round LSZH	3m	0~70°C	100G Ethernet
WS-QS28-AOCLC053	QSFP28 to QSFP28	4x25Gbps	OM3	Round LSZH	5m	0~70°C	100G Ethernet
WS-QS28-AOCLC103	QSFP28 to QSFP28	4x25Gbps	OM3	Round LSZH	10m	0~70°C	100G Ethernet
WS-QS28-AOCLC303	QSFP28 to QSFP28	4x25Gbps	OM3	Round LSZH	30m	0~70°C	100G Ethernet
WS-QS28-AOCPC503	QSFP28 to QSFP28	4x25Gbps	OM3	OFNP	50m	0~70°C	100G Ethernet
WS-QS28-AOCxtyyz	QSFP28 to QSFP28	4x25Gbps	See Note	Round, see Note	See Note	0~70°C	100G Ethernet

Note:

Cable type (x): L for LSZH, P for OFNP, and R for OFNR

Temp (t): C for 0~70 °C

Length (yy): 01 for 1m, 10 for 10m, 30 for 30m

Fiber (z): 2 for OM2, 3 for OM3

Variant Length, Cable Types, and Fiber can be customized. Please contact our sales for detail information.

Modification History

Revision	Date	Description	Originator	Review	Approved
V1.0	25-Feb-2025	New Release	Joanne Ni	Ken Cheng	Wayne Liao

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